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PATENT
MIT-094CP2CN

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Shirley

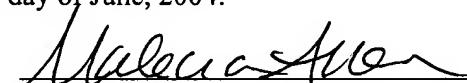
SERIAL NUMBER: 10/721,148 GROUP NO.: 2877

FILING DATE: November 25, 2003 EXAMINER: Smith, Zandra V.

TITLE: APPARATUS AND METHODS FOR SURFACE CONTOUR MEASUREMENTS

CERTIFICATE OF FIRST CLASS MAILING UNDER 37 C.F.R. 1.8

I hereby certify that this correspondence, and any document(s) referred to as enclosed herein, is/are being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 30th day of June, 2004.


Malecia Allen

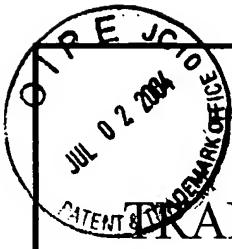
Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is/are:

1. Transmittal Form (1 pg.);
2. Information Disclosure Statement (2 pgs.);
3. Form PTO-1449 (3 pgs.);
4. Response to Restriction Requirement (1 pg.); and
5. Return-Receipt Postcard.

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TRANSMITTAL FORM

Application Serial Number	10/721,148
Filing Date	November 25, 2003
First Named Inventor	Shirley
Group Art Unit	2877
Examiner Name	Smith, Zandra V.
Attorney Docket No.	MIT-094CP2CN
Patent No.	Not applicable
Issue Date	Not applicable

ENCLOSURES (check all that apply)

<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Check Attached <input type="checkbox"/> Copy of Fee Transmittal Form	<input type="checkbox"/> Copy of Notice to File Missing Parts of Application <input type="checkbox"/> Formal Drawing(s)	<input type="checkbox"/> Notice of Appeal to Board of Patent Appeals and Interferences <input type="checkbox"/> Appeal Brief (in triplicate)
<input type="checkbox"/> Amendment/Response <input type="checkbox"/> Preliminary <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Letter to Official Draftsperson including Drawings [Total Sheets ____]	<input type="checkbox"/> Request For Continued Examination (RCE) Transmittal <input type="checkbox"/> Power of Attorney (Revocation of Prior Powers) <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Executed Declaration and Power of Attorney for Utility or Design Patent Application	<input type="checkbox"/> Status Inquiry <input checked="" type="checkbox"/> Return Receipt Postcard <input checked="" type="checkbox"/> Certificate of First Class Mailing under 37 C.F.R. 1.8 <input type="checkbox"/> Certificate of Facsimile Transmission under 37 C.F.R. 1.8 <input checked="" type="checkbox"/> Additional Enclosure(s) (please identify below)
<input type="checkbox"/> Petition for Extension of Time	<input type="checkbox"/> Small Entity Statement <input type="checkbox"/> CD(s) for large table or computer program <input type="checkbox"/> Amendment After Allowance <input type="checkbox"/> Request for Certificate of Correction <input type="checkbox"/> Certificate of Correction (in duplicate)	<input checked="" type="checkbox"/> Response to Restriction Requirement
<input checked="" type="checkbox"/> Information Disclosure Statement <input checked="" type="checkbox"/> Form PTO-1449 <input type="checkbox"/> Copies of IDS Citations		
<input type="checkbox"/> Certified Copy of Priority Document(s)		
<input type="checkbox"/> Sequence Listing submission <input type="checkbox"/> Paper Copy/CD <input type="checkbox"/> Computer Readable Copy <input type="checkbox"/> Statement verifying identity of above		

CORRESPONDENCE ADDRESS

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Respectfully submitted,

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PATENT
MIT-094CP2CN

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): Shirley

SERIAL NO.: 10/721,148 GROUP NO.: 2877

FILING DATE: November 25, 2003 EXAMINER: Smith, Zandra V.

TITLE: Apparatus and Methods for Surface Contour Measurements

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicant hereby makes of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. In accordance with the provisions of 37 C.F.R. § 1.98(d), copies of the references are not enclosed as these references were previously cited by or submitted to the U.S. Patent and Trademark Office in the parent application U.S.S.N. 09/480,043, and the prior application is relied upon for an earlier filing date under 35 U.S.C. § 120.

REMARKS

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

- (1) within three (3) months of the **filing date** of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the **date of entry of the national stage** as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the **first Office action** on the merits, or before the mailing of a **first Office action** after the filing of a request for continued examination under 37 C.F.R. 1.114; or
- (2) after the period defined in (1) but before the mailing date of a **final action** or a **notice of allowance** under 37 C.F.R. 1.311, and
- the requisite Statement is below, **OR**

Information Disclosure Statement

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- the requisite fee under 37 C.F.R. 1.17(p), namely **\$180.00**, is included herein, or
- (3) after the mailing date of a **final action or notice of allowance** but before the payment of the **issue fee**, **AND**
 - the requisite Statement is below, **AND**
 - the requisite petition fee under 37 C.F.R. 1.17(p), namely **\$180.00** is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

STATEMENT

As required under 37 C.F.R. 1.97(e), Applicant(s), through the undersigned, hereby state either that

- 1. Each item of information contained in the Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application **not more than three months** prior to the filing of the Information Disclosure Statement; or
- 2. No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this Statement after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to **any individual** designated in 37 C.F.R. 1.56(c) **more than three months** prior to the filing of the Information Disclosure Statement.

Respectfully submitted,



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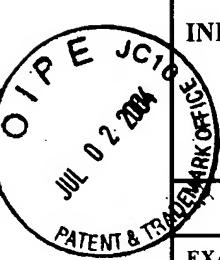
Date: June 30, 2004

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FORM PTO - 1449		ATTORNEY DOCKET NO.: MIT-094CP2CN (5473/101)					
INFORMATION DISCLOSURE STATEMENT		APPLICANT(S): Shirley					
		SERIAL NO.: 10/721,148					
		FILING DATE: November 25, 2003 GROUP: 2877					

U.S. PATENT DOCUMENTS

EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	A1	2001/0012388 A1	08/09/01	Muller et al.			03/04/98
	A2	3,994,589	11/30/76	Nodwell et al.			04/18/82
	A3	4,139,304	02-13-79	Redman, et al.	356	358	02-10-77
	A4	4,298,286	11-03-81	Maxey et al.	356	381	06-02-80
	A5	4,349,277	09-14-82	Mundy, et al.	356	376	06-11-80
	A6	4,499,492	02-12-85	Hutchin	358	107	02-07-83
	A7	4,781,455	11-01-88	Mächler, et al.	356	34	05-08-86
	A8	4,832,489	05-23-89	Wyant, et al.	356	359	03-19-86
	A9	5,146,293	09-08-92	Mercer, et al.	356	356	05-13-91
	A10	5,289,264	02-22-94	Steinbichler	356	376	09-25-92
	A11	5,455,670	10-03-95	Payne, et al.	356	5.1	05-27-93
	A12	5,621,529	04-15-97	Gordon et al.	356	376	04-05-95
	A13	5,666,197	08-09-97	Guerra	356	359	08-21-96
	A14	6,049,384	04-11-00	Rudd et al.	356	376	03-18-97
	A15	6,438,272	08-20-02	Huang et al.	382	286	12-31-98

FOREIGN PATENT DOCUMENTS

EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
	B1	2554086	06-16-77	DE			12-02-75	No	Abstract – Yes
	B2	2142427A	01-16-85	GB			05-21-84	No	Yes
	B3	61198009	09-02-86	JP			02-28-85	Yes	Yes
	B4	58173412	10-12-83	JP			04-05-82	Yes	Yes
	B5	97/29341	08-14-97	PCT			02-03-97	No	Yes
	B6	28 50 092 A1	05/29/80	DE			11/18/78	No	No Abstract in English

EXAMINER

DATE CONSIDERED

FORM PTO - 1449 INFORMATION DISCLOSURE STATEMENT					ATTORNEY DOCKET NO.: MIT-094CP2CN (5473/101) APPLICANT(S): Shirley SERIAL NO.: 10/721,148 FILING DATE: November 25, 2003 GROUP: 2877				
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
	B7	44 04 663 A1	08/17/95	DE			02/14/94	No	No Abstract in English
	B8	0 864 847 A2	09/16/98	EP			03/05/98	No	No Abstract in English
	B9	0 864 847 A3	09/16/98	EP			03/05/98	No	No Abstract in English
	B10	2 595 815	09/18/87	FR			03/17/86	No	No Abstract in English
OTHER ART, JOURNAL ARTICLES, ETC.									
EXAM. INIT.	OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)								
	C1	Butters, Von J. N., "Using the Laser to Measure Length," <i>Materialprüfung</i> , 24:245-248 (July 7, 1982) (German Abstract).							
	C2	Zou <i>et al.</i> , "Two-Wavelength DSPI Surface Contouring Through the Temperature Modulation of a Laser Diode," <i>Optik</i> , 94(4):155-158 (1993).							
	C3	Peng <i>et al.</i> , "A Simplified Multi-Wavelength ESPI Contouring Technique Based on a Diode Laser System," <i>Optik</i> , 91(2):81-85 (1992).							
	C4	Fercher <i>et al.</i> , "Two-Wavelength Speckle Interferometric Technique for Rough Face Contour Measurement," <i>Optical Engineering</i> , 25(5):623-626 (May 1986).							
	C5	Fercher <i>et al.</i> , "Rough Surface Interferometry with a Two-Wavelength Heterodyne Speckle Interferometer," <i>Applied Optics</i> , 24(14):2181-1288 (July 15, 1985).							
	C6	Thalmann <i>et al.</i> , "Dimensional Profiling by Electronic Phase Measurement," <i>SPIE Industrial Laser Interferometry</i> , 746:61-68 (1987).							
	C7	Takeda <i>et al.</i> , "Fourier-Transform Speckle Profilometry: Three-Dimensional Shape Measurements of Diffuse Objects with Large Height Steps and/or Spatially Isolated Surfaces," <i>Applied Optics</i> , 33(34):7829-7837 (December 1, 1994).							
	C8	Volotovskaya, N.K., "Relationship Between the Frequency and Angular Correlation Function of a Signal that is Scattered by an Extensive Body," <i>Radio Engineering and Electronic Physics J.</i> 16(6):1048-1049 (June 1971).							
EXAMINER					DATE CONSIDERED				

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	C9	Dresel <i>et al.</i> , "Three-Dimensional Sensing of Rough Surfaces by Coherence Radar," <i>Applied Optics</i> , 31(7):919-925 (March 1, 1992).
	C10	Shirley <i>et al.</i> , "Advanced Techniques for Target Discrimination Using Laser Speckle," <i>Massachusetts Institute of Technology, The Lincoln Laboratory J.</i> , 5(3):367-440 (1992).
	C11	Shirley, L. G., "Applications of Tunable Lasers to Laser Radar and 3D Imaging," <i>Technical Report 1025, Massachusetts Institute of Technology, Lincoln Laboratory</i> , (1995).
	C12	K. Creath, "Phase-measurement interferometry techniques," <i>Chap. 5 in Progress in Optics XXVI</i> , E. Wolf Ed. pp. 349-393, Elsevier Science Publishers, New York, NY (1988).
	C13	G.T. Reid, R.C. Rixon, and H.I. Messer, "Absolute and comparative measurements of three-dimensional shape by phase measuring moire topography," <i>Optics and Laser Technology</i> , 315-319, December, (1984).
	C14	G. Indebetouw, "Profile measurement using projection of running fringes," <i>Applied Optics</i> , 17(18), 2930-2933 (1978).
	C15	V. Srinivasan, H.C. Liu, and M. Halioua, "Automated phase-measuring profilometry of 3-D diffuse objects," <i>Applied Optics</i> , 23(18), 3105-3108 (1984).
	C16	L.S. Wang, B.N. Dobbins, K. Jambunathan, and X.P. Wu, "Fibre optic shape measuring system using phase stepping speckle pattern interferometry," <i>SPIE</i> , 2088, MJ. Downs Ed., pp. 104-110 (1993).
	C17	L.H. Bieman, "Absolute measurement using field shifted moire," <i>SPIE</i> , 1614, 259-264 (1991).
	C18	H.O. Saldner and J.M. Huntley, "Temporal phase unwrapping: application to surface profiling of discontinuous objects," <i>Applied Optics</i> , 36(13), 2770-2775 (1997).
	C19	K. Creath, "Phase-shifting speckle interferometry," <i>Applied Optics</i> , Vol. 24, No. 18, (1985).
	C20	J.M. Huntley and H.O. Saldner, "Shape measurement by temporal phase unwrapping and spatial light modulator-based fringe projector," <i>SPIE</i> , Vol. 3100, 185-192, (1997).
	C21	R.W. Wygant, S.P. Almeida, O.D.D. Soares, "Surface inspection via projection interferometry," <i>Applied Optics</i> , Vol. 27, No. 22, (1988).
	C22	D. Paoletti and S. Spagnolo, "Fast Fourier Transformed Electronic Speckle Contouring for Diffuse Surfaces Profilometry," <i>Optics and Lasers in Engineering</i> , 20, 87-96, (1994).
	C23	G. Sansoni, L. Biancardi, U. Minoni, F. Docchio, "A Novel, Adaptive System for 3-D Optical Profilometry Using a Liquid Crystal Light Projector," <i>IEEE Transactions on Instrumentation and Measurement</i> , Vol. 43, No. 4, (1994).
	C24	M. Chang, C. Ho, C. Hu, "A Design for an Optical Coordinate Measuring Machine System," <i>Proc. Natl. Sci. Counc. ROC(A)</i> , Vol. 18, No. 5, 477-484, (1994).
	C25	C. Joenathan, B. Pfister, H.J. Tiziani, "Contouring by electronic speckle pattern interferometry employing dual beam illumination," <i>Applied Optics</i> , Vol. 29, No. 13, (1990).
EXAMINER		DATE CONSIDERED